

## Calculus I - MAT 141

Summer I, 2006

TR 6:00pm - 9:00pm

“Mathematics, rightly viewed, possesses not only truth, but supreme beauty – a beauty cold and austere, like that of sculpture, without appeal to any part of our weaker nature, without the gorgeous trappings of painting or music, yet sublimely pure, and capable of a stern perfection such as only the greatest art can show”

*Bertrand Russell*

**Instructor:** Christopher Godbout      **email:** cgodbout@cedarcrest.edu

**Office Hours:** I will be available in the hour before class in the classroom.

Additional office hours are available by appointment.

**Text:** Stewart, James. *Calculus*, 5<sup>th</sup> ed.

**Calculators:** A graphing calculator is optional. Any calculator may be used on homework assignments, but only scientific calculators will be allowed on the exams.

### Course Description

Calculus, at its heart, is the study of change. This is often phrased in many bizarre ways, but it comes down to asking, “How fast is something changing at one instant in time?”. Even though his question seems pretty simple, it has many applications and makes many other things in mathematics and science possible.

### Course Outcomes

- Understand and compute limits.
- Understand and compute derivatives - one of the most important tools in mathematics.
- Apply these tools in various ways, such as drawing a graph, finding rates of change, and finding optimum solutions.
- Be able to think mathematically.
- Become rich and famous.

## **Attendance**

Attendance in this course is not required and I will not be keeping track of students' attendance (or lack thereof). However, with so few people, chronic absences will be noticed. Even though attendance is not required, it is **highly** recommended. Keep in mind that since each class is three hours, this makes up about one week of class during a normal semester. Even one absence can be very detrimental.

If you are going to be absent for a quiz or test, I will need advance notification. Failure to notify me may result in a 0 for the quiz or exam.

## **Homework**

Homework will be a very important part of this course. Working problems is vital to your understanding of the material. There will be many practice problems assigned and a few hand-in problems each week. The practice problems will be taken from the textbook while I will make up the hand-in problems and give them to you on Tuesday. Working together is not only acceptable, it is encouraged. Just remember that you have to hand in your own work and you will not be allowed to work together on quizzes or exams.

Since the purpose of the homework is to help you understand, any problems you get wrong on the homework you may rework and hand them in again the following week. Any homework you redo like this will be counted normally. So it is possible for everyone to have a perfect homework average. Late homework, however, will not be accepted without a valid reason.

Finally, work must be shown on the homework. An answer with no justification might not receive full credit even if it's correct.

## **Quizzes and Exams**

There will be three quizzes given in this class - one every other week. Each quiz will be given at the beginning of class and you will have 45 minutes. The quizzes will consist of computational problems and some application. Also, the quiz problems will be drawn directly from the practice problems, so working the practice problems will be very beneficial. Scientific calculators will be allowed on the quizzes, but no graphing calculators, notes, books, or help from other students.

The final exam will be on June 27th and should take up the whole three

hours. It will be very comprehensive and will consist of mainly computation and application. I will let you know more about the exam the week before. The same rules for the quizzes apply to the final.

### **Grading**

Homework assignments and quizzes are worth 50 points each. The final exam will be worth 200 points, for a total of 500 points available in the semester.

The grade distribution I will use is: A (93 and up), A- (90 to 93), B+ (87 to 90), B (83 to 87), B- (80 to 83), C+ (77 to 80), C (73 to 77), C- (70 to 73), D+ (67 to 70), D (60 to 67), F (Below 60).

### **Honor Code**

The Cedar Crest College Honor Code will be very strictly enforced in this course. All students are expected to adhere to the statement: *I fully support the Cedar Crest College Honor Code and the Classroom Protocol code as stated in the Customs Book.* For those of you who do not have a copy of the college handbook, the Honor Philosophy is as follows:

The Cedar Crest Honor Philosophy states that students shall uphold community standards for academic and social behavior in order to preserve a learning environment dedicated to personal and academic excellence. Individuals who accept the honor of membership in the Cedar Crest College community of scholars pledge to accept responsibility for their actions and the effect their actions may have on other members of the College community.

What does this mean for this course? Students are expected to act courteously and politely at all times. The classes should be free from distractions such as cell phones going off and conversations (this is not an inclusive list).

For homework assignments, I once again encourage you to work together and help each other, but any work you hand in must be your own. There will also be no working together on quizzes or the exam. Copying off one another will result in a zero for the assignment/quiz/exam and will be reported to the dean.

### **Stuff that doesn't fit anywhere else**

- Knowledge of precalculus and high school algebra with trigonometry is a prerequisite for this class. This will be reviewed, but you should have seen this already.
- Remember that this course will be moving faster than a course that takes a semester. This means that falling behind can be far more harmful. I am more than willing to meet with you to help you, but you must also be willing to do the work.
- Professional tutoring is being provided by Academic Services. If you're interested, you can contact Gary L. Moll at [glmoll@cedarcrest.edu](mailto:glmoll@cedarcrest.edu) or 610-606-4666 x3485. His summer hours are from 9:00 am to 6:00 pm in Admin 213.
- Students with documented disabilities who may need academic accommodations should discuss this with me during the first two weeks of class. Any student who wishes to request accommodations should contact the Advising Center.

Possible Schedule

Date	Topics Covered
Tuesday, May 16	Syllabus §1.1, 1.2 - Functions
Thursday, May 18	§1.3 - Combining functions Appendix D - Trigonometry
Tuesday, May 23	§2.1 - Tangent lines and velocity §2.2, 2.3 - Limits
Thursday, May 25	Quiz §2.5 - Continuity §2.6 - Tangent lines (again)
Tuesday, May 30	§3.1, 3.2 - Defining derivatives
Thursday, June 1	§3.3 - Differentiation formulas §3.5 - Derivatives of trig functions §3.4 - Applications of derivatives
Tuesday, June 6	§3.6 - Chain rule §3.7 - Implicit differentiation
Thursday, June 8	Quiz §3.8 - Higher derivatives §3.9 - Related rates
Tuesday, June 13	§3.10 Linear approximations §4.1 - Max and min problems §4.2 - Mean value theorem
Thursday, June 15	Quiz §4.3, 4.4 - Using calculus to graph functions
Tuesday, June 20	§4.5 - More graphing §4.7 - Optimization
Thursday, June 22	§4.10 - Antiderivatives §4.9 - Newton's method
Tuesday, June 27	Final exam

### Practice Problems

Section	Problems
§1.1	1,5,7,9,11,21,23,25,29,33
§1.2	1,3,9
§1.3	3,7,9,13,15,35,41
Appendix D	1-11 odd, 23,25,26
§2.1	1,5
§2.2	3,5,13
§2.3	3,9,11,17,37
§2.5	3,5,11,17,23,45
§2.6	3,7,19,25
§3.1	5,13,25
§3.2	1,9,19,21,35
§3.3	3,5,7,9,11,13,15,23,27,51
§3.4	3,9,13 (you don't have to give an explanation for part c)
§3.5	1,5,11,15,19,21
§3.6	1,3,7,11,31
§3.7	5,9,17,25
§3.8	5,13,17,29,33
§3.9	3,5,9,11
§3.10	5,7,21,31
§4.1	7,31,45,49,63
§4.2	1,11,13
§4.3	1,5,11,17,29
§4.4	9,11,13,25,35,43
§4.5	1,7,9,15,27
§4.7	3,9,13
§4.9	5,7,11
§4.10	1,3,7,9,17,29